

Stochastic

11/10/2015

no JI

JKP-P

II new

$$Q1: S = \{1, 2, 3, 4, 5, 6\}$$

E_1 = Even Number

$$E_1 = \{2, 4, 6\}$$

$$\begin{aligned} P(E_1) &= P(2) + P(4) + P(6) \\ &= \frac{1}{2} \end{aligned}$$

Q2:

A = exactly one head.

$$= \{HT, TH\}$$

$$P(A) = \frac{4}{9}$$

B = at least one head

$$B = \{HH, TH, HT\}$$

$$P(B) = \frac{8}{9}$$

$$A \cap B = \{TH, HT\}$$

$$P(A \cap B) = \frac{4}{9}$$

$$A \cup B = \{TH, HT, HH\}$$

$$P(A \cup B) = \frac{8}{9}$$

Sample point	Probability
HH	4/9
HT	2/9
TH	2/9
TT	1/9

Q6:

A : at least one head

$$A^c = \{\text{TTTTTTTTT}\}$$

$$P(A^c) = \frac{1}{1024}$$

$$\begin{aligned} P(A) &= 1 - \frac{1}{1024} \\ &= \frac{1023}{1024} \end{aligned}$$

Q5:

Age	white	Black
≤ 17	2%	2%
18-19	3%	2%
20-28	41%	12%
≥ 30	33%	5%

$$S = \{(\leq 17, w), (\leq 17, B), (18-19, w), (18-19, B), (20-28, w), (20-28, B), (\geq 30, w), (\geq 30, B)\}$$

$$A = \{(\leq 17, A), (18-19, w), (20-28, w), (\geq 30, w)\}$$

$$B = \{(\leq 17, w), (\leq 17, B), (18-19, w), (18-19, B)\}$$

$$P(A) = 0.79 \quad P(B) = 0.09$$